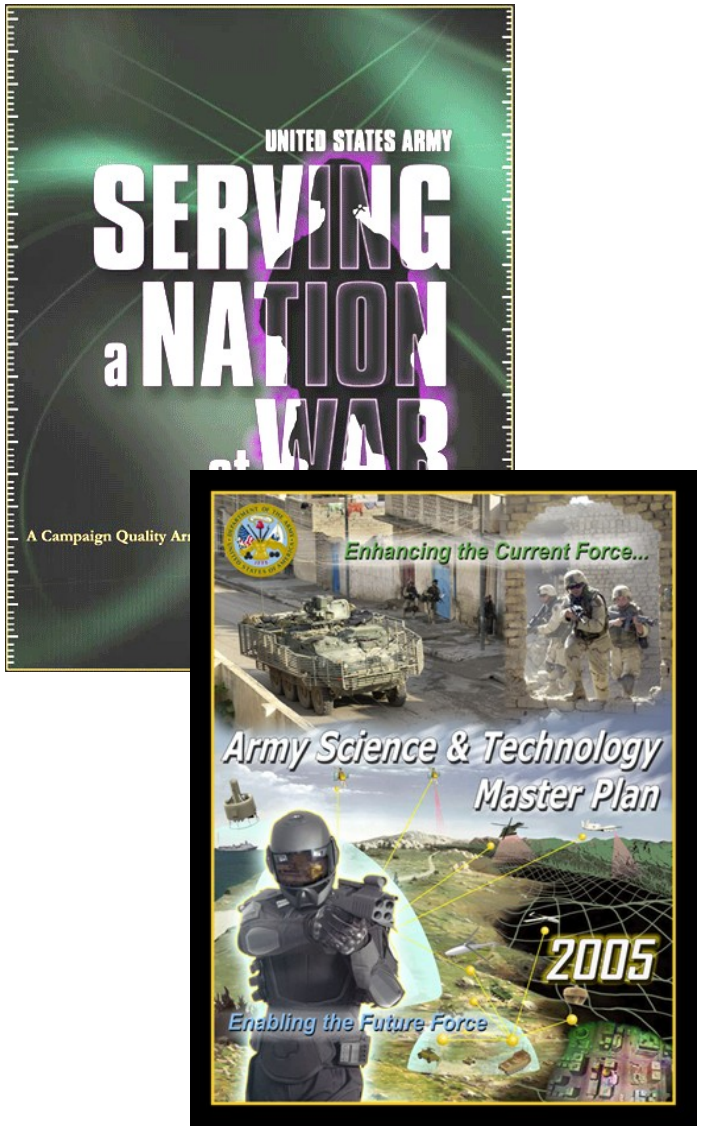
Army Science & Technology

S&T Executives Perspective—Focusing on Warfighter needs

20 April 2005



Dr. Thomas Killion
Deputy Assistant Secretary for Research and Technology/ Chief Scientist

Army S&T Vision—
Pursuing Transformational Capabilities

Speed, Reach, and Precision

Current Force

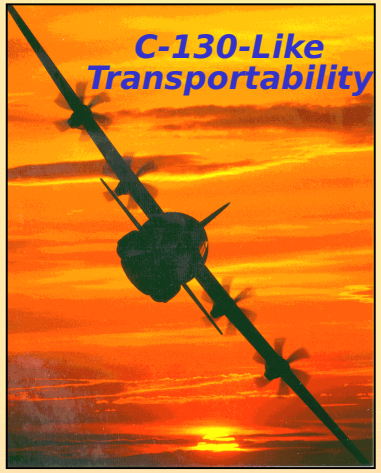
~100 lb. load

70+ tons

< 10 mph

From Platforms to System of Systems

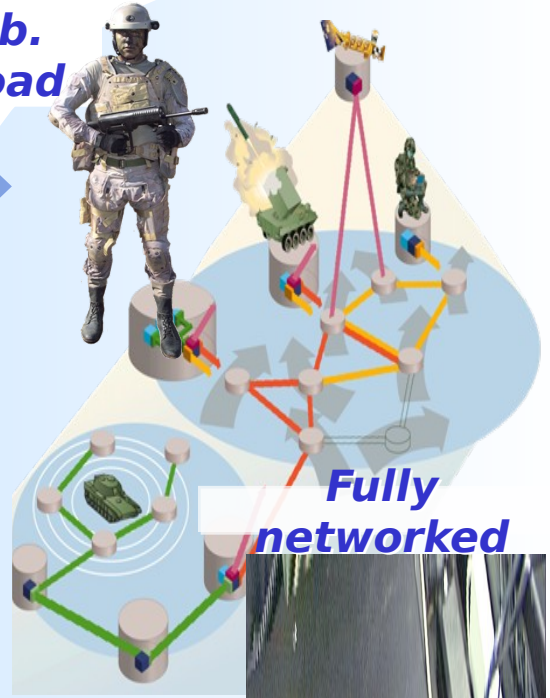
Enabling the Future Force



Enhancing the Current Force

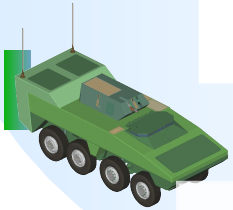
Future Force

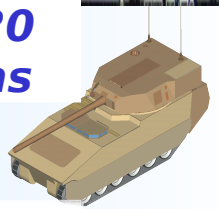
< 40 lb. load



Fully networked

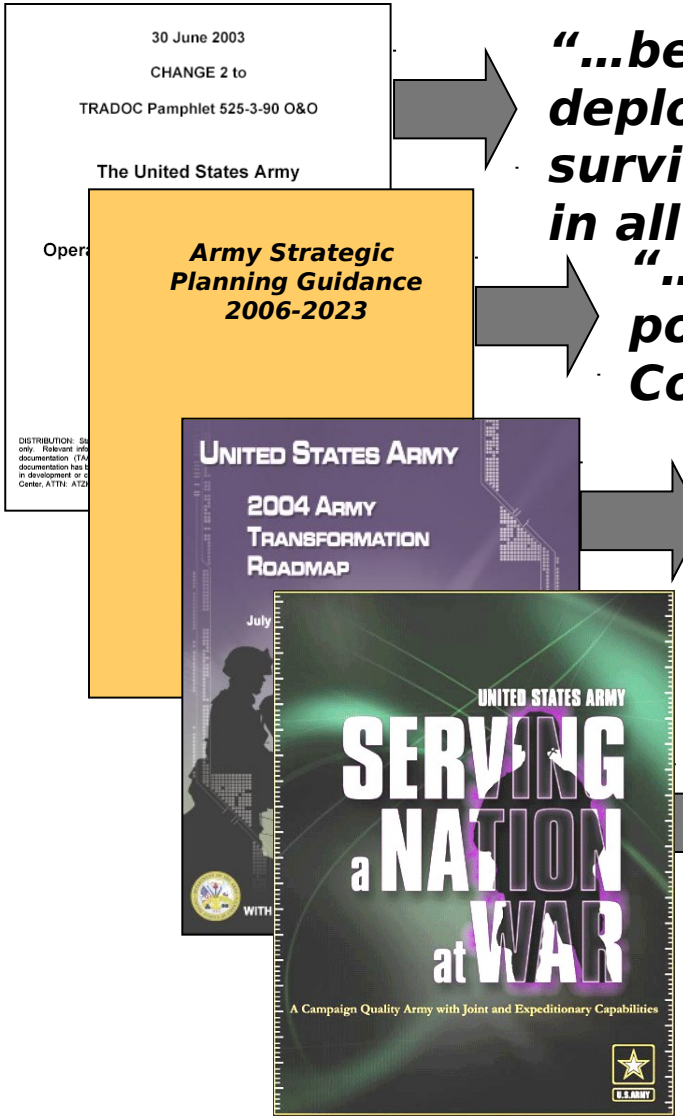
< 20 tons





> 40 mph

Responding to Army Needs


30 June 2003
CHANGE 2 to
TRADOC Pamphlet 525-3-90 O&O
The United States Army
Army Strategic Planning Guidance 2006-2023
UNITED STATES ARMY
2004 ARMY TRANSFORMATION ROADMAP
UNITED STATES ARMY
SERVING a NATION at WAR
A Campaign Quality Army with Joint and Expeditionary Capabilities

"…become a more strategically responsive, deployable, agile, versatile, lethal, survivable, and sustainable force, effective in all situations …"

"…provide relevant and ready land power capability to the Combatant Commander as part of the Joint Team"

"…provide dominant land power to the Joint Force now and into the future."

"…change in time of war must deal simultaneously with both current and future needs"

Army S&T Program Drivers—
Current and Future Force Capability Gaps

Emerging Top Challenges for Current Force

- Improve Soldier Protection in Counter-Insurgency Environment
- Provide Prototype Network Enabled Battle Command to Current Force
- Provide Responsive, Networked, Precision Fire
- Protect the Force in Non-Contiguous Battlespa
- Improve Non-Lethal Capabilities for the Curren
- Improve Ability of Current Forces to Conduct J
- Expand HUMINT Capabilities
- Increase Ability and Speed of Analysis and Inf
- Increase Army Ability for Sustained, High Oper
- Improve SOF and Conventional Forces Integra

Top Ten Future Required Capabilities from Capabilities Needs Assessment

- Enhance Soldier Protection
- Provide Effective C^2 Throughout All Phases of Ops; Any Location
- Enhance Platform Protection
- Provide C^4 Architecture – Fully Functional in all Conditions, LOS/NLOS
- Provide Modular, Tailorable Forces Rapidly Deployable in Mission Config
- Lethality Overmatch – Any Enemy LOS/BLOS/NLOS, All Conditions
- Allow Train as you Fight, Operating Similar at both CTCs & Home Station
- Provide Superior ISR – Modular, Scalable, Tailored Battlefield Awareness
- Provide Enhanced Countermine (CM) Capabilities
- Provide Modular Forces Tailored for Self-Sufficiency and Endurance

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GWOT Capabilities Provided by S&T

Soldier Protection

Interceptor Body Armor is a modular, multi-threat Body Armor using an Outer Tactical Vest (OTV) and Small Arms Protective Insert (SAPI) Plates

- *Key Technologies: Advanced high performance*

7.62 mm rou
SAPI and e

Counter IED

IED Change Detection

Integrate Change Detection Work Station with airborne sensors systems to locate IEDs along routes

Imagery & Metada

Objective:

•Use existing and
sensors systems
initial capability
changes along r

First of 5

- *System tested at Yuma on UH-1, Apache, Shadow*
- *1 system fielded J an 05;*

Vehicle Protection

Vehicle Protection: Expedient Armor* for Standard HMMWVs

- *Fielded for Operation Iraqi Freedom with initial fielding in Nov 2003*
- *ARL developed a technology solution, TARDEC refined the design and integrated it into the vehicle and the Tank-automotive and Armaments Command's Ground Systems Industrial Enterprise is now taking the resultant technical data package and making the kits in quantity*
- *Has saved lives from both small arms and IED attacks*
- *Production of the final 2,500 HMMW kits continues ahead of schedule with completion in Mar 2005*

First Convoy of Expedient Armor Equipped HMMWVs arrives in Iraq

Occupants survived IED Attack

**Expedient Armor is NOT being put on up-armored HMMWVs*

- *13,803 High Mobility Multipurpose Wheeled Vehicle (HMMWV) armor survivability kits produced*
  - *10,725 installed*
- *1,082 Heavy Expanded Mobility Tactical Truck (HEMTT) kits produced*
  - *701 installed*
- *750 Family of Medium Tactical Vehicles(FMTV) kits produced*
  - *621 installed*

- *1025 Stryker Kits produced - 930 kits presently deployed in 3 brigades*
- *60 M1 Kits Built*

Vehicle Protection-Stryker Bar Armor

- *Developed by GDLS*
- *This armor is in use on the Strykers in Iraq in 2004 (installed in 2003)*
- *Bar Armor requires at least ~10-12" of distance from robust base armor to be effective*
- *Bar armor is intended to damage the RPG, to prevent the formation of a "Shaped Charge Jet". Bar spacing based on destroying RPG without "arming" it*
- *Even in "Successful Defeat of RPG", there will still be an explosive blast. This is why you need a protective layer of robust armor*

Using technology from past investments

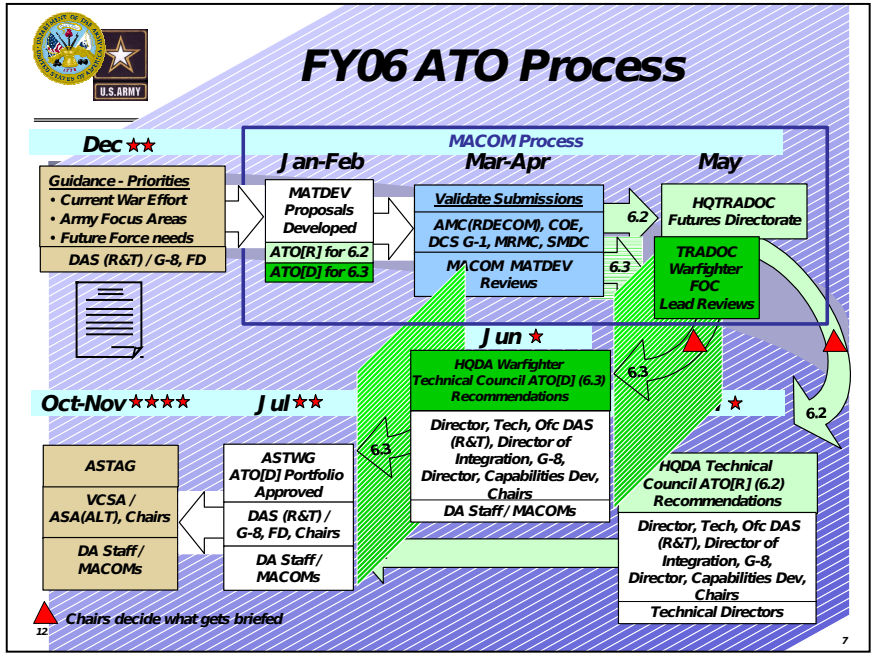
Exploiting opportunities from current investments

Leveraging Scientist & Engineer expertise

"We do not want to wait for perfect solutions"
- GEN Abizaid

Army Technology Objective (ATO) Process

- *HQDA Guidance—to shape program priorities for new proposals*
- *ATO(Demonstration) programs require Force Operating Capability (FOC) lead (Combat Developer) endorsement— WTC review*
- *ATO(Research) programs require HQTRADOC Director, Capabilities Development validation— Technical Council Review*
- *WTC/TC chairs determine which programs are briefed—Fact Sheet information identifies need for briefing*
- *[illegible] HQDA*



ATO[Demonstration] = 6.3
ATO[Research] = 6.2

Senior Leader Engagement

ASTWG (Army S&T Working Group)

CO-CHAIR: DAS(R&T) / G-8 FD

- TRADOC (Futures Center)
- RDECOM
- SMDC
- MRMC
- USACE
- DAS(DE&C)
- Dep, Sys Mgt
- PAE
- ODCS G-1
- ODCS G-2
- ODCS G-3
- ODCS G-4
- ODCS G-6
- ATEC

Initiatives

- Army Technology Objectives
- Advanced Technology Demonstrations
- Army S&T Master Plan
- Strategic Research Objectives

ASTAG (Army S&T Advisory Group)

CO-CHAIR: ASA (ALT) / VCSA

- CG, AMC
- CG, FORSCOM
- CG, USACE
- CG, TRADOC
- CG, SMDC
- DCS G-1
- DCS G-2
- DCS G-3
- DCS G-4
- CIO/DCS G-6
- DCS G-8
- TSG
- ASA (ALT) MILDEP
- DUSA(OR)
- Dir, TRADOC Futures Center

OSD DDR&E

DSTAG (Defense Science & Technology Advisory Group)

Initiatives

- Defense S&T Strategy
- ACTDs
- TARA Reviews
- DTAP/JWSTP
- Defense Tech Objectives

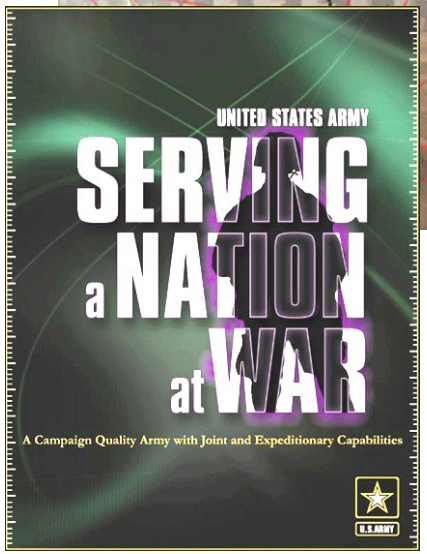
PEOs as Acquisition Council

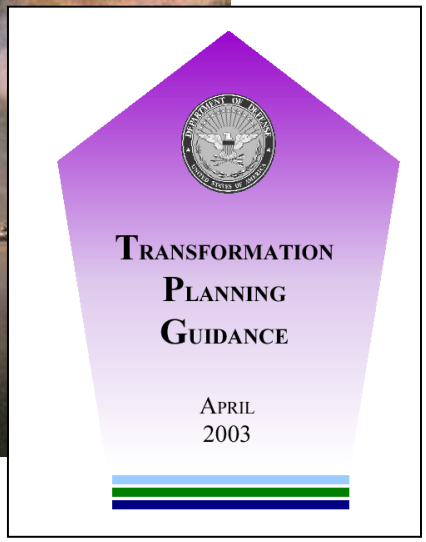
TDs as Technical Council

&T / Warfighter / PEO Partnership

The Army…

Transforming while at War





"…this may mean making the difficult decision of foregoing currently planned systems and investing instead in capabilities that we believe will reduce future risk."

Secretary Rumsfield

"Finally, the nature of expeditionary operations argues for leveraging every potential tool of speed, operational reach, and precision."